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FLEXHOUSING™: BUILDING ADAPTABLE HOUSING

Introduction

Priorities change throughout life, so why can't houses be built for change, too? To buyers, having a FlexHouse means never being forced to move. Building houses to physically grow and adapt, to meet the changing lifestyle needs of singles, families, seniors and different owners is the new direction in residential construction. From attic to basement, esthetics, affordability, accessibility and adaptability are the characteristics of a FlexHouse.

Called Universal Housing in the U.S. and Lifetime Homes in the U.K., Canadian FlexHousing construction offers more buyers more choices. Flex features are practical, common-sense elements that appeal to a wide range of consumer needs and budgets while being energy efficient, healthy, safe and environmentally friendly—all under one roof.

FlexHousing: Homes that Adapt to Life's Changes, published by Canada Mortgage and Housing Corporation, helps consumers in every market segment determine the benefits of FlexHousing. Its companion, *FlexHousing: The Professionals' Guide*, helps professionals develop floor plans and design FlexHousing features.

Yes, you can

A FlexHome can be a bungalow, condominium apartment or infill townhouse. Materials and components are readily available and construction methods build on standard practices set out in CMHC's Canadian Wood-Frame House Construction. There is nothing inherently different about building doors with a clear opening of 865 mm (34 in.) or straight-run stairs that are 1,100 mm (43 in.) wide. Many Flex features are already defined or required in existing building standards. As with conventional housing, local codes and regulations apply to FlexHousing design and construction.

Imagine building a house that is preplanned for subdividing. Add another bathroom? The plumbing and wiring are already roughed-in. Convert a bedroom into a home office or a family room into two bedrooms? Movable walls using the forced-fit-no-nails (FFNN) system make renovation easy and inexpensive. Thinking about future double occupancy? The interior space is pre-framed to accommodate two separate living units within the same shell. FlexHousing is the new direction in home construction.

Buyers want high-value FlexHousing

Buyers of new homes want modern, low-maintenance, energy-efficient houses at entry-level prices. FlexHousing is high-quality, attractive and economical to build. Families want a safe environment with more space that accommodates career, marriage and children. An aging population wants a bright, accessible and easy-to-maintain home.

Canadians prefer energy-efficient features when they buy or renovate. FlexHouses incorporate upgraded insulation, high-efficiency heating systems and large thermal windows. Homeowners want the freedom to choose interior layouts and to renovate easily. And FlexHousing features can be incorporated into renovations.



Including FlexHousing features during construction creates a house with greater sales potential. Some builders have the misperception that FlexHousing is too expensive and the market too small. As *FlexHousing: The Professionals' Guide* shows, this is not true. Buyers consistently choose the comfort, convenience and safety of an easy-to-use home.

FlexHousing features

Designing a practical FlexHouse involves anticipating possible uses, potential traffic flows and servicing requirements. The cost of building a FlexHouse is about the same as construction costs for a conventional house. Healthy Housing™ low-emission materials in a FlexHouse improve indoor air quality and space-efficient designs reduce land requirements. Because a FlexHouse has more promotional possibilities and consumer comforts than a conventional home, it is a superior investment for both builder and buyer. Its many quality features, attention to detail and flexibility increase curb appeal and resale value.

1. Doors

A FlexHouse has as few doors as possible. These doors are at least 865 mm (34 in.) wide, with clear-swing hinges, easy-to-grasp lever handles and a good seal against extreme temperatures. Thresholds, if present at all, are no higher than 19 mm (.75 in.) for exterior doors and 15 mm (.50 in.) for interior doors. Strong locks and viewing holes in exterior doors—at a height of 1,500 mm (60 in.) and 1,065 mm (42 in.) so everyone can see out—are added safety features.

2. Stairs

Stairs are at least one metre (43 in.) wide with a maximum tread depth of 280 mm (11 in.) from riser to riser and a maximum riser height of 180 mm (7 in.) There is a minimum of three and a maximum of 12 risers in each run. Nosings, if present at all, do not extend any more than 38 mm (1 ½ in.) Handrails provide a comfortable grip and well-distributed lighting—100 lux at landings—is crucial for safety. For people who cannot use stairs, stacked closets can be converted to elevator shafts.

3. Windows

Windows are easy to open, close and lock. Operating hardware is no higher than 1,200 mm (47 in.) above the floor. Lever hardware is easier to operate than rotary hardware. Window sills no higher than 750 mm (30 in.) provide a good view even for seated people. Sills wide enough for plants are a popular and handy feature. Double-hung windows are not used unless they are counterbalanced for easy, single-handed operation.

4. Walls and floors

Spruce does not off-gas and is a good choice for better indoor air quality. Fibre-reinforced gypsum drywall creates less dust and fewer volatile chemicals during installation.

Structural reinforcement of walls is a FlexHousing feature. In bathrooms this permits installation of grab bars and support aids. Throughout the house, there is low-maintenance wood and tile flooring. For an energy-efficient basement floor, rigid board insulation is placed under the concrete, which retains 75 per cent more heat. A polyethylene sheet between the insulation and concrete prevents soil gases and moisture from entering the house.

5. Electrical

Electrical systems—light switches, controls, outlets and breaker panels—are readily accessible from both a standing and sitting position. Rocker switches are inexpensive and convenient. FlexHousing uses a variety of lighting sources from windows and skylights to area lighting, task lighting and overhead fixtures. Ceiling fixtures are either installed or roughed-out in hallways, corridors and stairways. Compact fluorescent bulbs use 75 per cent less energy and last longer than incandescent bulbs.

6. Heating and cooling

High-efficiency furnaces, heat pumps and integrated space-and water-heating systems regulate temperatures precisely and economically. Fan motors of 100 watts can be four to eight times more efficient than conventional fans. Heat recovery ventilators (HRVs) can recover 70 per cent of the heat from indoor air creating a healthier, more comfortable, home. The additional \$2,000 an HRV costs can be recovered over seven to eight years.

Room-by-room look

Let's look at some FlexHousing touches room by room.

Kitchens

An L- or U-shaped kitchen provides continuous counter surface within reach. Task lighting makes everything easier to see and lever tap handles over the sink are easier to use. Non-slip flooring and adjustable modular cabinets with a side-open wall oven are safety features.

Living and Dining

A doorless entry with no threshold creates an open feeling and permits easy access. Large windows also give a spacious impression and more natural light. Well-insulated walls not only filter exterior noise, but enhance the enjoyment of music and conversation inside.

Bathrooms

One bathroom is on the main floor. Designs for every bathroom are space-efficient. The tub is accessible along its entire length and has dual-lever faucets and a vertically-adjustable shower. Free space on at least one side of the toilet improves accessibility. Walls are reinforced for support aids. Laundry facilities adjacent to the bathroom and bedrooms are a convenient and time-saving feature.

Bedrooms

FlexHouse bedrooms permit flexible furniture arrangement while keeping a clear space around the bed. There are several electrical outlets and telephone jacks throughout the room. Two positions for the closet rod and shelf permit anyone to reach them. Windows are low enough to allow children and seated adults to see out. One bedroom is designed so it can be divided into two smaller rooms without disrupting windows or wiring.

Attics, balconies and patios

An attic framed for conversion into additional living space is an excellent selling point. A habitable attic can be built using one of three open truss systems.

Balconies are large enough for people to move around and for furniture. They have wide access doors and well-drained floors with smooth, non-slip surfaces. Railings are 1,250 mm (49 in.) high and allow an unobstructed view when seated.

Conclusion

All of life's evolving requirements can be built into a FlexHouse—a home for life. Offering a FlexHouse option contributes to neighbourhood stability and to a sense of community that benefits both consumers and the bottom line. In neighbourhoods across Canada, more and more builders are creating houses, apartments and condominiums with FlexHousing features in response to growing consumer demand. CMHC National FlexHousing Design Competition winners have built homes in Vancouver, Edmonton, Ottawa, and St. Nicolas, Quebec.

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Research Report:

FlexHousing: Homes that Adapt to Life's Changes

FlexHousing: The Professionals' Guide

These publications are available from CMHC at the address below.

Housing Research at CMHC

Under Part IX of the *National Housing Act*, the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research.

This fact sheet is one of a series intended to inform you of the nature and scope of CMHC's research.

The **Research Highlights** fact sheet is one of a wide variety of housing related publications produced by CMHC.

For a complete list of **Research Highlights**, or for more information on CMHC housing research and information, please contact:

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